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A61F 13/20

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GB A	2081586	GB	0443278
GB	1516962	GB	0352849
GB	1454812	EP A1	0068213
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GB	0806558		

(58) Field of search
A5R
B4K

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(54) Tampon applicator

(57) In a tampon applicator consisting of a cylinder for storing an absorber and a push-out member slidably fitted to the rear part of the absorber storing cylinder, the improvement wherein a grip portion is disposed at the rear part of the absorber storing cylinder and has recessed or flat plane-like portions.

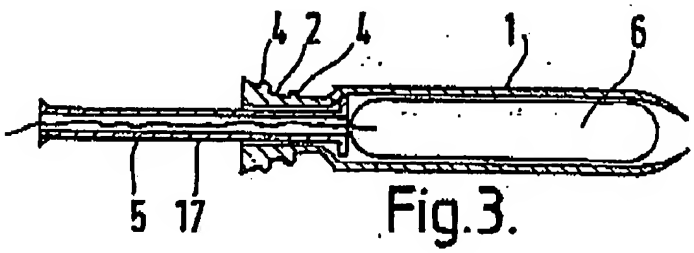


Fig.3.

GB 2 166 656 A

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

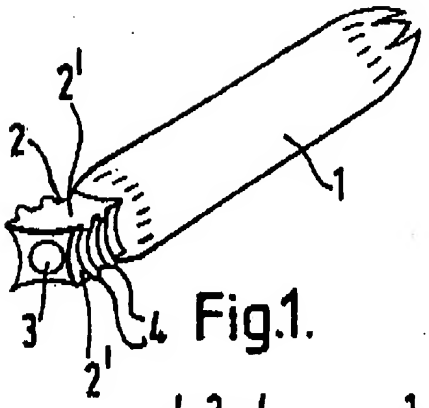


Fig.1.

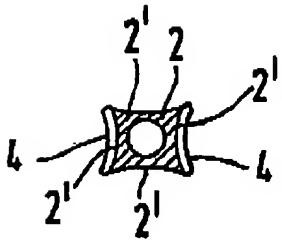


Fig.2.

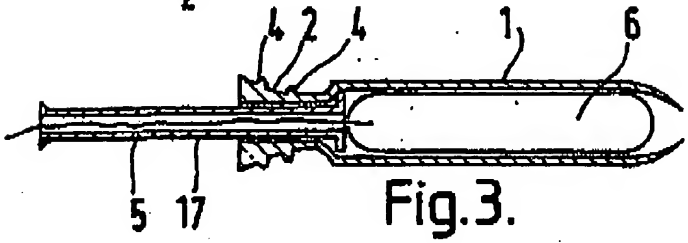


Fig.3.

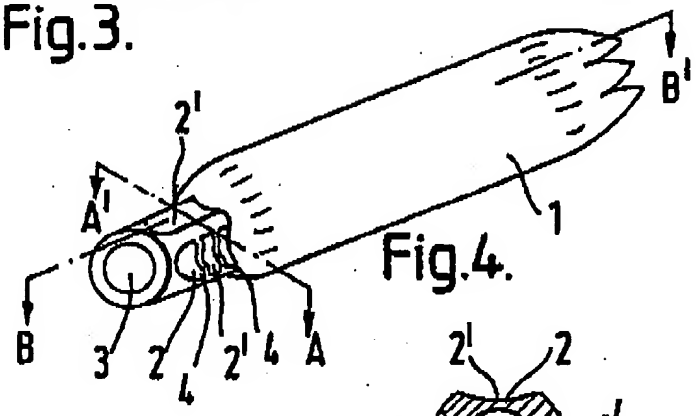


Fig.4.

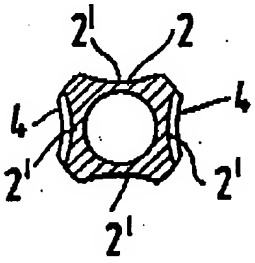
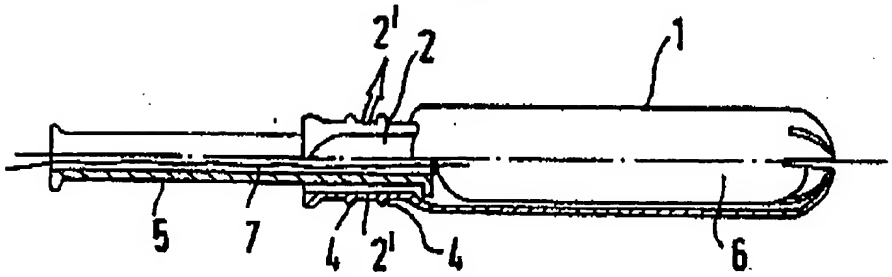


Fig.5.

Fig.6.



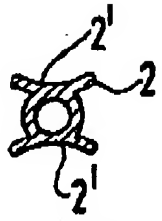


Fig.7.

Fig.22

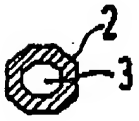


Fig.23.

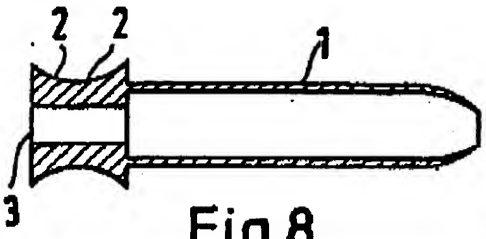


Fig.8.

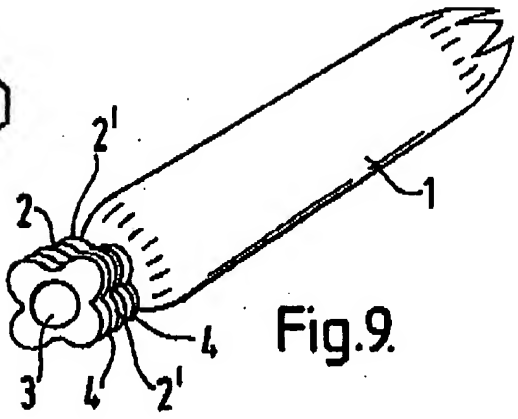


Fig.9.

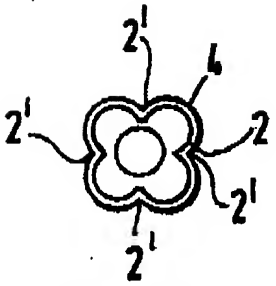


Fig.10.

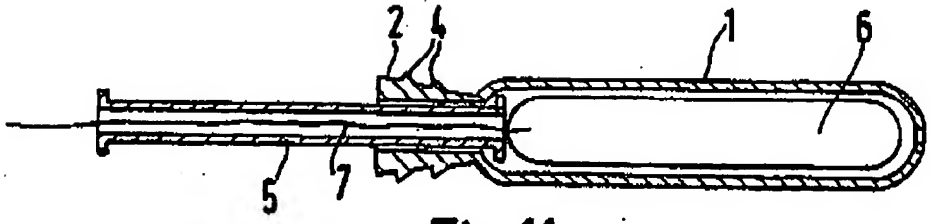
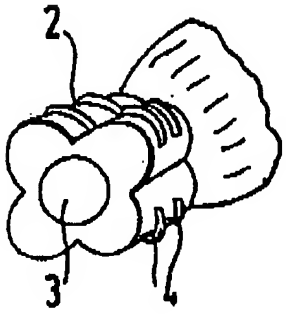


Fig.11.

Fig.12a.



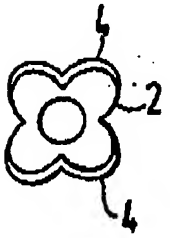
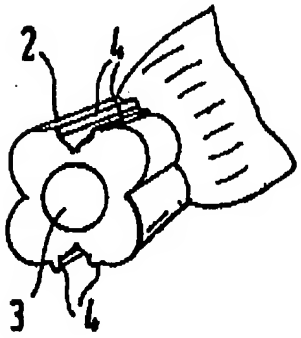


Fig.12b.

Fig.13a



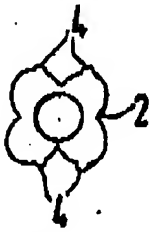


Fig.13b.

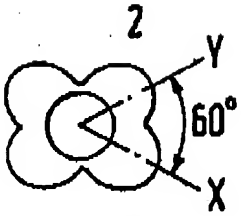


Fig.14.

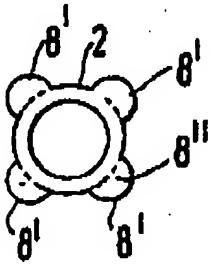


Fig.15.

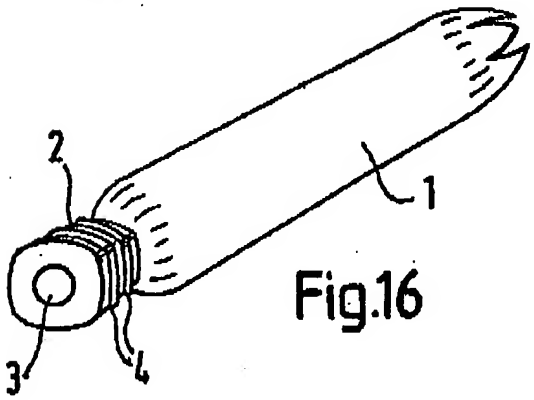


Fig.16

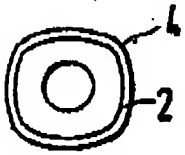


Fig.17.

Fig.18.

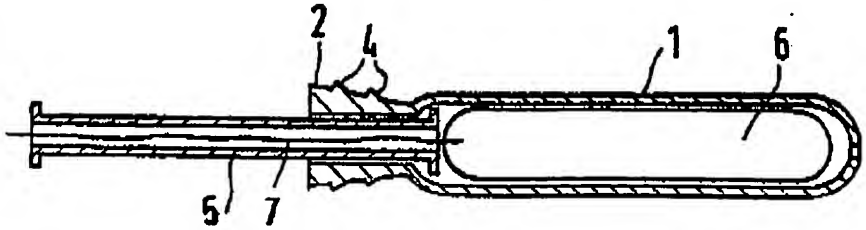


Fig.19a

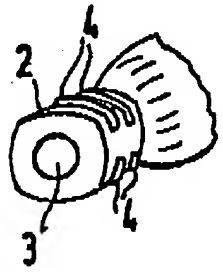
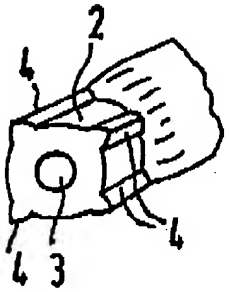


Fig.20a



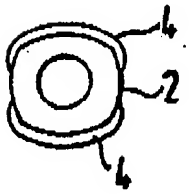


Fig.19b.

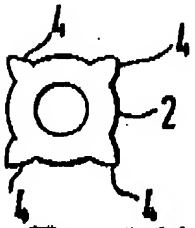
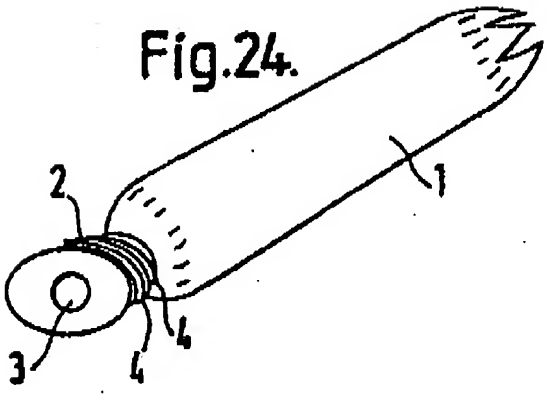


Fig.20b.

Fig.21.

Fig.24.



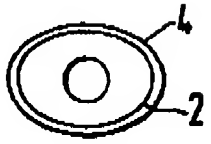


Fig.25.

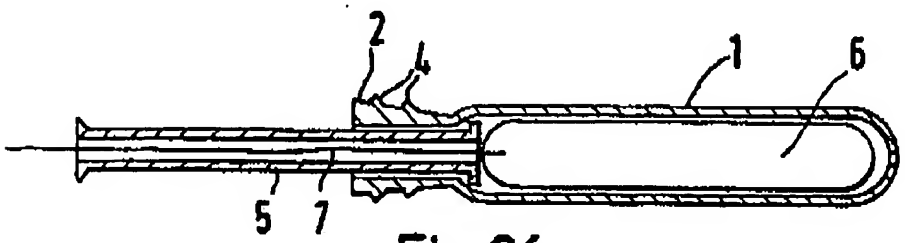


Fig.26.

Fig.27a.

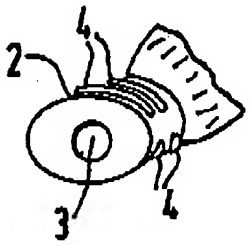


Fig.28a.

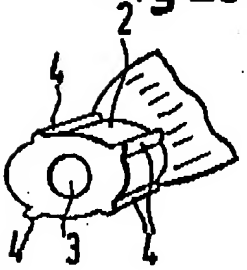


Fig.27b.

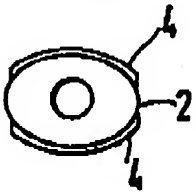


Fig.28b.

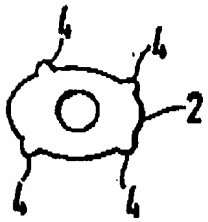


Fig.29.

Fig.30.

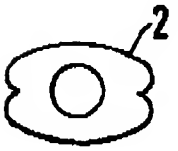


Fig.31.

SPECIFICATION
Tampon applicator

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a hygienic tampon applicator, and more particularly to a grip portion disposed at the rear part of a cylinder for storing an absorber of an applicator.

Description of the Prior Art

As the prior art references relating to the grip portion disposed at the rear part of a cylinder for storing an absorber of a hygienic tampon applicator, mention can be made of Japanese Utility Model Publication No. 21787/1984, Japanese Utility Model Laid-Open No. 5919/1984, Japanese Utility Model Laid-Open No. 147516/1983, and so forth. In these prior art references, the grip portion is molded in the form of a cylinder which is substantially the same as, or considerably smaller than, the main body of a cylinder for storing an absorber of an applicator, and a single rib or a plurality of ribs are disposed on the outer surface of the grip portion in such a manner as to project therefrom.

In the prior art devices of the kind described above, the grip portion is supported by the first and third fingers, and a push-out member of the applicator is slid by the second finger so that the absorber stored in the cylinder for storing the absorber is pushed out and is inserted into the body. However, the prior art devices are not free from the problem that it is by no means easy to reliably support the grip portion by the two fingers, and particularly when the absorber is inserted into the body by sliding the push-out member of the applicator by the second finger, the first or third finger is likely to slip and come off from the grip portion.

SUMMARY OF THE INVENTION

In order to eliminate the problem of the prior art devices described above, the present invention is directed to provide a tampon applicator consisting essentially of a cylinder for storing an absorber and a push-out member slidably fitted to the rear part of the absorber storing cylinder, the tampon applicator characterized in that a grip portion is disposed at the rear part of the absorber storing cylinder and has recessed or flat, plane-like portions.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view showing an absorber storing cylinder of an applicator in accordance with a first embodiment of the present invention;

Figure 2 is a cross-sectional view of its grip portion;

Figure 3 is a cross-sectional view showing the state in which an absorber is inserted into the tampon applicator;

Figures 4 through 6 show a second embodiment of the present invention, and correspond to Figures 1 through 3, respectively (with Figure 6 showing only the lower part in section);

Figure 7 shows a third embodiment of the present invention, and is a longitudinal cross-sectional view corresponding to Figure 2;

Figure 8 shows a fourth embodiment of the present invention, and is a longitudinal cross-sectional view of the absorber storing cylinder;

Figures 9 through 11 show a fifth embodiment of the present invention, and correspond to Figures 1 through 3, respectively;

Figures 12 and 13 show a sixth embodiment of the present invention, wherein (a) is a perspective view of the grip portion and (b) is its cross-sectional view;

Figures 14 and 15 show seventh and eighth embodiments of the present invention, and are cross-sectional views corresponding to Figure 10;

Figures 16 through 18 show a ninth embodiment of the present invention, and correspond to Figures 1 through 3, respectively;

Figures 19 and 20 show a tenth embodiment of the present invention, and correspond to Figures 12 and 13, respectively;

Figures 21 through 23 show eleventh through thirteenth embodiments of the present invention, and are cross-sectional views corresponding to Figure 17;

Figures 24 through 26 show a fourteenth embodiment of the present invention, and correspond to Figures 1 through 3, respectively;

Figures 27 and 28 show a fifteenth embodiment of the present invention, and correspond to Figures 12 and 13, respectively; and

Figures 29 through 31 show a sixteenth embodiment of the present invention, and are cross-sectional views corresponding to Figure 25.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, some preferred embodiments of the present invention will be decribed with reference to the accompanying drawings.

Figure 1 is a perspective view showing the cylinder for storing the absorber of the applicator in accordance with a first embodiment of the present invention, Figure 2 is a cross-sectional view of its grip portion, and Figure 3 is a cross-sectional view showing the state in which the absorber is inserted into the tampon applicator of the invention.

The tampon applicator of this embodiment consists of the cylinder 1 for storing the absorber and a pushout member 5, and the absorber 6 is stored inside the cylinder 1. This embodiment is characterized in the shape of the grip portion 2 which is disposed at the rear part of the cylinder for storing the absorber. It has a substantially square pillar shape having four recessed portions 2', 2', 2' and 2'.

In this embodiment, the profile of the grip portion 2 changes in the longitudinal direction as shown in Figure 3, and the outer size at the rearmost part of the grip portion 2 is preferably greater than that at the center. A rib 4 is preferably disposed on the outer surface of the grip portion 2 so as to project upward.

The push-out member 5 has a small cylindrical shape having an outer diameter which is smaller than the inner diameter of a hole 3 in which the pull-

out member 5 can slide. A string 7 fitted to the absorber penetrates through its cylinder portion. The hole 3 is not particularly limited to the round shape, but may be elliptic, substantially polygonal, or the like.

The outer diameter of the grip portion 2 may be greater or smaller than, or equal to, the outer diameter of the cylinder 1 for storing the absorber. The number of ribs 4 projecting on the outer surface of the grip portion 2 need not necessarily be limited to the two as in this embodiment, but may be single or plural. Furthermore, the rib 4 need not necessarily be disposed, or it may have a ring-like shape disposed continuously on the outer surface.

The embodiment described above is used in the following way. The grip portion 2 is supported by the first and third fingers while the push-out member 5 of the applicator is slid by the second finger, so that the absorber 6 stored in the cylinder 1 is fitted into the body. In this embodiment, since the grip portion has the recessed portions, each of the first and third fingers can support the grip portion 2 in a greater area when supporting the grip portion 2 by these fingers, so that the applicator can be held extremely easily and reliably. Therefore, the problem that the fingers slip and come off from the applicator when inserting the absorber 6 into the body by sliding the push-out member can be remarkably reduced.

Figures 4 through 6 show the second embodiment of the present invention, and correspond to Figures 1 through 3, respectively (with the proviso that Figure 6 shows only the section of the lower half). In this embodiment, the grip portion 2 consists of a cylindrical member having the four recessed portions 2', 2', 2', 2' on its surface, and these recessed portions are recessed in a section represented by line A—A' in Figure 5. The recessed portion 2' is recessed in the proximity of the grip portion in a section represented by B—B' in Figure 6. Therefore, this embodiment provides the excellent advantage in the respect of safety of inserting the absorber, by rounding the sharp corner portions at the crossing positions of the recessed portions, while maintaining the advantage of the grip portion having the recessed portions in the first embodiment shown in Figures 1 through 3.

Furthermore, the outer diameter of the cylinder of the grip portion 2 is constant in the longitudinal direction, and the outer diameter of the grip portion 2 can be made smaller than that of the outer cylinder 1 of the applicator. Therefore, the applicator outer cylinder 1 can be aligned by a direction aligning device utilizing the difference of the outer diameters of the applicator outer cylinder 1 and the grip portion 2. Since the recessed portion 2' is recessed at the rearmost part of the grip portion in the direction of the section represented by line B—B', the finger can fit firmly when using the applicator and can smoothly insert the absorber during the sliding operation of the inner cylinder while the finger is in positive contact with the grip portion. Incidentally, the outer diameter of the grip portion 2 need not always be smaller than the outer diameter of the applicator outer cylinder 1 because an aligning device of a different system from the above can also be used. Furthermore, the projecting rib or ribs 4 may be disposed on the outer surface of the grip portion 2 in the same way as in the first embodiment.

Figure 7 shows the third embodiment of the present invention, and is a sectional view corresponding to Figure 2. The grip portion 2 in this embodiment has exactly the same construction as that of the first embodiment except that it has two recessed portions which are substantially parallel to each other on its surface. More definitely, the grip portion 2 consists of a cylindrical member having two recessed portions 2', 2' disposed in the circumscribing arrangement with its surface.

Figure 8 shows the fourth embodiment of the present invention, and is a longitudinal sectional view of the cylinder 1 for storing the absorber. Though the grip portion 2 of this embodiment has merely a round cross-sectional shape, its longitudinal section exhibits the recessed shape as shown in Figure 8.

Figures 9 through 11 show the fifth embodiment of the present invention, and correspond to Figures 1 through 3, respectively. The grip portion 2 of this embodiment has substantially the same construction as the first embodiment except that the grip portion 2 consists of a petaline pillar having a plurality of projecting petals, and the rib 4 is disposed on its outer surface in the form of a continuous ring. More definitely, the grip portion has substantially the petaline pillar and the recessed portions 2', 2', 2' and 2' that are defined by the adjacent petals. When the recessed portions 2' are supported by the first and third fingers, each finger comes into contact with the two petals and hence, with a wider area.

In the embodiment described above, the outer shape of the grip portion 2 has the tapered petaline shape, but it need not have taper. The outer diameter of the grip portion 2 may be greater or smaller than, or equal to, the outer diameter of the cylinder 1 for storing the absorber. The number of ribs 4 projecting on the outer surface of the grip portion 2 is not particularly limited to two, but may be single or plural. Furthermore, the rib 4 need not necessarily be disposed. Though the ribs 4 in the embodiment described above are disposed in the continuous ring form on the outer surface, they may be disposed in the divided lines as in the sixth embodiment of the invention shown in Figures 12 and 13. In Figures 12 and 13, (a) represents a perspective view of the grip portion, and (b) does its section.

Figure 14 shows the seventh embodiment of the present invention, and is a cross-sectional view corresponding to Figure 10. In this embodiment, the angle between the X and Y axes is set to be 60 degrees in the section of the grip portion 2, so that each finger can come into contact with a wider area than the embodiment shown in Figures 9 and 10, in which the angle is 90 degrees, when the grip portion 2 is supported by the first and third fingers. Needless to say, the angle between the X and Y axes need not be particularly limited to 90 degrees or 60

degrees.

Figure 15 shows the eighth embodiment of the present invention, and is a sectional view corresponding to Figure 10. In this embodiment, each petal 8' is disposed on a circle in a spaced apart from the others in the section of its grip portion 2, so that each finger can come into contact with a further wider area when the grip portion 2 is supported by the first and third fingers.

Figures 16 through 18 show the ninth embodiment of the present invention, and correspond to Figures 1 through 3, respectively. The grip portion 2 in this embodiment has substantially the same construction as that of the first embodiment except that the grip portion 2 consists of a plurality of convex surfaces, and the ribs 4 are disposed in continuous ring form on its surface. More definitely, since the grip portion consists of four flat concave surfaces, each finger can come into contact with a wide area when the grip portion is supported by the first and third fingers, in the same way as in the first embodiment.

In the embodiment above, the outer shape of the grip portion 2 is the tapered, substantially square pillar, but the taper need not necessarily be disposed. For example, two of the four side surfaces may be disposed with the rest being not tapered, without tapering all of the four side surfaces. The outer diameter of the grip portion 2 may be greater or smaller than, or equal to, the outer diameter of the cylinder 1 for storing the absorber. The number of ribs 4 projecting on the outer surface of the grip portion 2 is not particularly limited to two, but may be single or plural. Furthermore, the rib need not necessarily be disposed. Though the ribs 4 are disposed in the continuous ring form on the outer surface in the embodiment described above, they may be the divided lines such as in the tenth embodiment of the invention shown in Figures 19 and 20. In these drawings, (a) is a perspectively view of the grip portion, and (b) is its sectional view.

Figure 21 shows the eleventh embodiment of the present invention, and is a sectional view corresponding to Figure 17. In this embodiment, the grip portion 2 has a substantially triangular section, and each finger can come into contact with a wider area than in the embodiment shown in Figure 16 and 17 when the grip portion 2 is supported by the first and third fingers, by combining a plurality of projecting sides with one another to define a trochoidal shape.

Figures 22 and 23 show the twelfth and thirteenth embodiments of the present invention, and are sectional views corresponding to Figure 17. The grip portion 2 in each of these embodiments is a substantially polygonal pillar consisting of a plurality of planes. The corner defined at the crossing of each plane is preferably rounded or chamfered as shown in Figure 22.

Figures 24 through 26 show the fourteenth embodiment of the present invention, and correspond to Figures 1 through 3, respectively. The grip portion 2 in this embodiment has substantially the same construction as that of the first embodiment except that it has substantially elliptic pillar-like flat portions and the ribs 4 are disposed in the form of a continuous ring on its outer surface. More definitely, since the grip portion consists of two flat convex planes that are parallel to each other, each finger can come into contact with a wider area in the same way as in the first embodiment when the grip portion 2 is handled.

In the embodiment described above, the outer shape of the grip portion 2 is an elliptic pillar having the taper, but it need not have the taper, or it may be a substantially elliptic pillar on which one end has round section while the other has an elliptic section. The outer diameter of the grip portion may be greater or smaller than, or equal to, the outer diameter of the cylinder 1 for storing the absorber. The number of ribs 4 projecting on the outer surface of the grip portion 2 is not necessarily limited to two, but may be single or plural. Furthermore, the rib 4 may not be disposed at all. Though the ribs 4 are shown disposed on the outer surface in the form of the continuous ring in the embodiment described above, they may be disposed in the form of divided lines as in the fifteenth embodiment of the invention shown in Figures 27 and 28. In these drawings, (a) is a perspective view of the grip portion and (b) is its sectional view.

Figures 29 through 31 show the sixteenth to eighteenth embodiments of the present invention, and are sectional views corresponding to Figure 25, respectively. In each of these embodiments, the section of the grip portion 2 is substantially elliptic. However, the length of the major axis is reduced as much as possible by forming partially notches at both ends of the section in the direction of its major axis. This arrangement makes the applicator more easily portable, and can reduce its production cost by reducing the quantities of materials such as plastic, paper and the like when molding the applicator.

Although the tampon applicator of the present invention has thus been described with reference to some preferred embodiments thereof, the invention is not particularly limited thereto but can be practised in various other manners. For example, the present invention is not particularly limited to the construction in which a plurality of triangular flexible projections are added at the forward end portion in the curved state towards the interior of the cylinder for storing the absorber, but the cylinder may be left as such after a cylinder is cut. The projecting members to be disposed on the outer surface of the grip portion are not particularly limited to the strip-like ribs, but may be dot-like. The tampon applicator of the present invention can be molded from suitable materials such as plastic, paper and the like in the same way as the prior art device, and there is no particular limitation to its materials.

As described above, since the grip portion at the rear part of the cylinder for storing the absorber in the tampon applicator of the present invention has recessed or flat plane-like portions, the ease of operation and handling when inserting the absorber into the body is excellent high, and the production cost is substantially the same as the prior art

devices. Hence, the effect of the invention is extremely high.

CLAIMS

1. In a tampon applicator consisting of a cylinder for storing an absorber and a push-out member slidably inserted into the rear part of said absorber storing cylinder, the improvement wherein a grip portion is disposed at the rear part of said absorber storing cylinder and has recessed or flat plane-like portions.

2. The tampon applicator as defined in claim 1 wherein said grip portion has at least two recessed or flat plane-like portions.

3. The tampon applicator as defined in claim 2 wherein said grip portion has at least two recessed or flat plane-like portions that are substantially parallel to each other.

4. The tampon applicator as defined in any of claims 1 through 3 wherein the outer shape of said grip portion changes in the longitudinal direction, and the outer shape at the rearmost part of said grip portion is greater than the outer shape close to the center of said grip portion.

5. The tampon applicator as defined in any of claims 1 through 4 wherein projecting members are disposed on the outer surface of said grip portion.

6. The tampon applicator as defined in any of claims 1 through 5 wherein said grip portion has the shape of a substantially retaline pillar and recessed portions defined by and between the petals adjacent to one another.

7. The tampon applicator as defined in any of claims 1 through 6 wherein said grip portion has the shape of a substantially polygonal pillar.

8. The tampon applicator as defined in any of claims 1 through 6 wherein said grip portion has substantially elliptic, flat plane-like portions.

9. A tampon applicator comprising a cylinder for storing an absorber, a push out member slidably inserted into the rear part of said absorber storing cylinder, and a grip portion disposed at the rear part of said absorber storing cylinder, said grip portion having recessed or substantially flat plane-like portions.

10 A tampon applicator comprising a cylinder for storing an absorber, an opening at one end of the cylinder, a gripper at the other end of the cylinder, an ejector slidable in the gripper and in the cylinder to eject the absorber through said opening, and means on the gripper to resist movement of the user's fingers axially along the gripper in the direction away from the cylinder.

11. A tampon indicator constructed and arranged as herein described with reference to Figs 1 to 3 or Figs 4 to 6 or Fig 7 or Fig 8 or Figs 9 to 11 or Figs 12 and 13 or Fig 14 and 15 or Figs 16 to 18 or Figs 19 and 20 or Figs 21 to 23 or Figs 24 to 26 or Figs 27 and 28 or Figs 29 to 31.

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